

Information Technology *for Engineering & Manufacturing*

Electronic Commerce of Component Information

The electronics industry is critical to the growth of the US economy, with domestic transactions valued at \$675B in 1997, rising to \$785B in 1999 and growing to an estimated \$1.16T by 2004. The electronics industry is fiercely competitive, and the environment is very unforgiving in terms of missing market introductions or incorrectly estimating product demand. These time-to-market demands coupled with shrinking product life-cycles and shelf-lives (note the rapid turn-over of PC's and cell-phones) lead to the acceleration of product development cycles, rapid manufacturing ramp-up to high volumes, and the corresponding dramatic "end of life" production as the next generation is brought to market. The electronic component industry lends itself particularly well to transactions on the web. There is a wide variety of information about electronic components that can be exchanged via the Internet. There is also an emerging market for "virtual electronic components", i.e., software representations of electronic components. Standards are needed to make this exchange, efficient, effective and therefore less costly. This presentation talks about how NIST has been working with industry to develop standards and reference software to support electronic commerce of electronic components.

Presented by Jim St.Pierre

Jim St.Pierre, a NIST employee, is currently on temporary assignment as Special Advisor (on E-Commerce Technology) to the U.S. Department of Commerce's Under Secretary for Technology. As a member of the NIST director's Program Office, Jim has provided overall coordination of NIST e-commerce efforts and he previously managed a department of 15 researchers working in the areas of electronic product data exchange standards, and video quality measurements and standards. Prior to his NIST service, Jim was with IBM, where he worked in printed circuit board and chip design methodology, tool integration, development, and support.

Scroll to start

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Speakers

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Exit

Electronic Commerce of Component Information

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Goals

Facilitate commerce of electronic components between suppliers and customers using the World Wide Web.

Reduce Time to Market

- Reduce product design staff hours
- Reduce time to integrate new components into internal component databases
- Lower cycle times

Reduce Manufacturing Costs

- Lower cost parts
- Reduce inventory costs

E-Business Facts

- Business to Business E-commerce
 - 1997 – \$8 Billion
 - 1999 – \$41 Billion
 - In 1998 – estimated it will be \$327 Billion by 2002.
 - In 1999 – estimate revised to \$1.3 Trillion by 2003.
- GE did \$1 Billion in procurement in 1997 via the Internet
 - Labor reduced 30 percent
 - Material costs decline 5-20 percent due only to wider base of suppliers online.
 - Procurement time reduced 50%
 - Estimate \$5 billion by 2000
 - Savings of \$500-\$700 Million annually

Why NIST?

ECIX Council Companies

- Hitachi
- IBM
- Intel
- Motorola
- Philips Semiconductor
- Texas Instruments
- Hewlett-Packard (HP)
- Lucent Technologies

ECIX Customer Advisory Board

- Silicon Integration Initiative (Si2)
- NIST
- Seagate
- Tektronix
- Xerox

ECIX QuickData (QD) 1.0

- 10 Common QD elements
- Query /Return all 10
- 5 Additional Information Objects
- XML Based
- HTTP protocol

How does NIST Help?

- Develop Tools to aid industry
 - Bridge gap between standards
 - Translators (Electronic Dictionary Work)
- Develop Conformance Tests
 - Technical Leadership and expertise
 - Neutral bias for industry
 - Validate implementations
- Develop Reference Implementations
 - Help technically validate standards early in development process

Business reasons driving ECCL

- 70% of the cost of a board is the components *-Source IPC*
 - Components are typically selected VERY EARLY in the design cycle, based on design requirements and available component information.
- First 5% of work commits 70-80% of costs
- Up to 25% of a design engineers time is spent in component selection
- Up to 50% of a components engineers time spent searching, documenting components
- Adding a new component to internal DB is a bottleneck
 - New part setup costs \$10K-\$25K
 - 10 years ago this took 6 weeks, today it takes 48 hours, tomorrow - ZERO!

QuickData (QD) 1.0

Query/Results

- Part Number
- Part Number Revision Level
- Technology
- Mounting
- Pin Count
- Operating Temperature
- Key Text
- Package
- Supplier DUNS
- Customer DUNS

Additional Information Returned

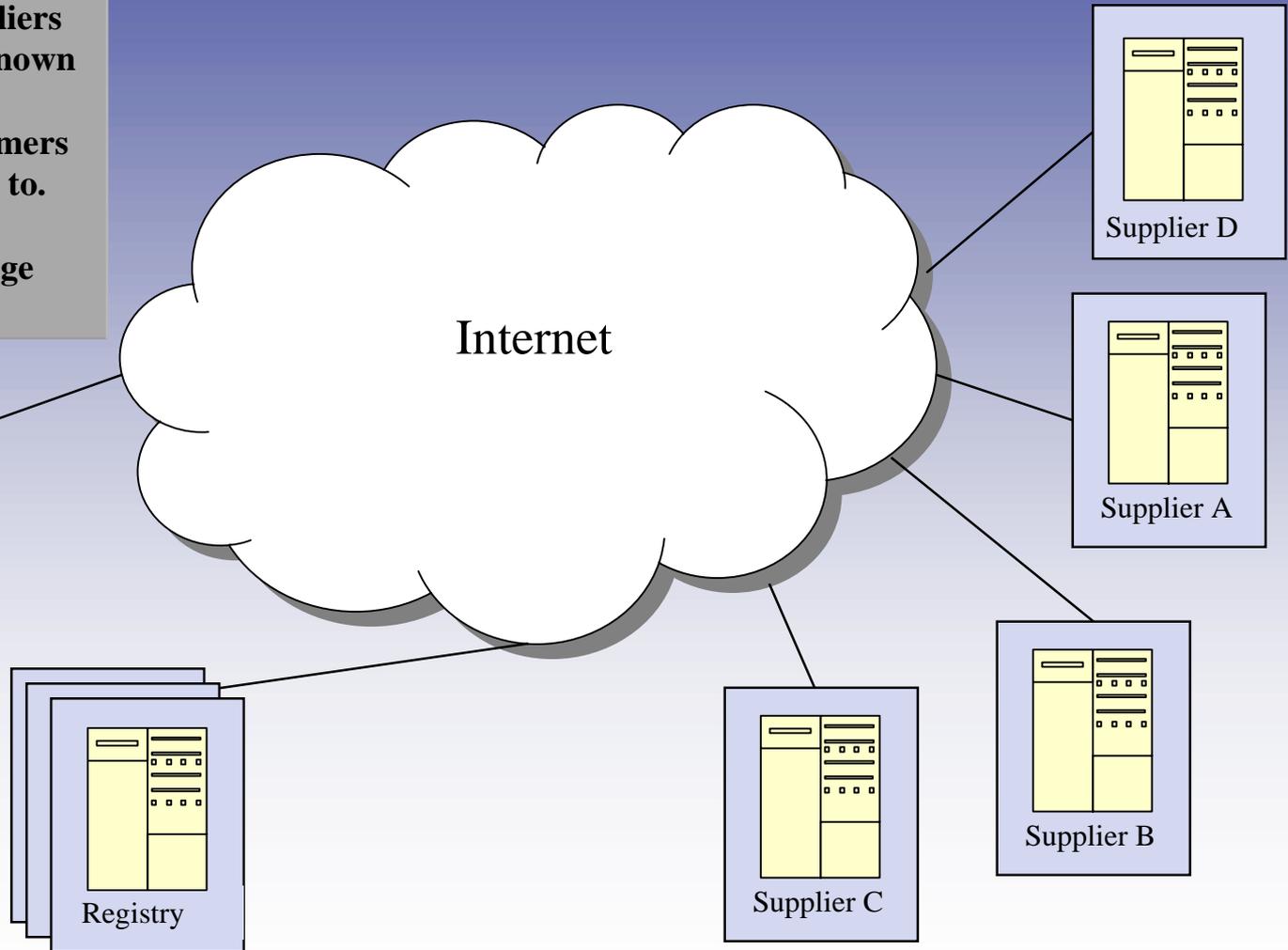
- PDF Datasheet
- PCIS SGML Datasheet
- TDML Timing Diagram
- Distributor Quote Price
- Verilog Simulation File
- VHDL Simulation File
- Lifecycle Simulation

Demonstration of ECCI

- Registry allows suppliers to make themselves known to customers.
- Only deal with customers or suppliers you want to.
- SSL Security.
- Uses XML as exchange protocol.



Design Engineer



Summary

- Demonstrated at Design Automation Conference (DAC 99).
- Prototype used by Agile Software Inc. and CAE Solutions to incorporate QuickData into their latest software releases
- NIST participated in an implementer's workshop sponsored by Si2, 80 people from 40 companies attended, NIST gave presentation on PKI strategies.
- Implement next phase – Virtual components - Intellectual Property Cores